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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, HUONG Q

ART UNIT	PAPER NUMBER
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3736

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/613,116	GOSWAMI, AMBARISH	
	Examiner	Art Unit	
	Helen Nguyen	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the RCE filed on 9/6/2006. Claims 1-4, 6-10, and 12-22 are cancelled. Claims 23-43 have been added. **Claims 23-43** remain pending.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the velocity diagram of **Claims 34-40** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 34-40** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, although applicant mentions the existence of velocity diagrams (¶0031 of the specification), there is no mention in the specification of any method wherein velocity diagrams and a corresponding value of a characteristic are generated from angular velocity data. Subsequently, it is unclear how said velocity diagrams would be generated, as it is unclear as to what exactly constitutes a velocity diagram because of the exclusion of said diagrams from the submitted drawings. Please see the drawing objections above and §112 2nd rejection below.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. **Claims 24-25, 34-40, and 35-36** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Regarding **Claims 24-25 and 35-36**, it is unclear what is referred to by “one body,” “same body,” and “different body,” and how each are distinct from the other.

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8. Regarding **Claims 34-40**, it is unclear how the velocity diagram of Claim 34 is generated from the gathered angular velocity data. It is also unclear what is meant by said velocity diagram, as said element has not been shown in the drawings. It is also noted that the method of said claims has not been fully described in the specification to allow complete and clear understanding.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 23-33 and 42-43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al (US Pat No. 5957870) et al in view of Hershler et al (*Angle-Angle Diagrams in the Assessment of Locomotion*).

11. In regards to **Claim 23 and 29-30**, Yamato et al disclose a method comprising:

determining a first set of data that comprises angles of a joint (Col.11, line 44-49) of a first limb as the first limb performs movement, wherein the first limb is a foot (1) of a leg (Col.5, line 49-50) and the movement is walking (Col.2, line 10-15);

determining a second set of data that comprises angles of a joint (Col.11, line 44-49) of a second limb as the second limb performs a similar movement, wherein the second limb is the second foot used during walking (Col.2 line 10-15; Col.7 line 27-29), wherein it would have

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been obvious to determine joint angles of both limbs as Yamato et al already disclose determining sets of data for both limbs;

generating a shape, referred to as "superposed image" (22) (Col.6, line 15), based on the first set of data and the second set of data, as best seen in Figure 4 and 9 (Col.9, line 31-33), wherein it would have been obvious to generate a shape based on joint angle data as Yamato et al already disclose generating a shape based on data as well as the determining of joint angle data.

12. However, Yamato et al do not disclose said generated shape as a cyclogram and do not disclose determining a value of a characteristic of the generated cyclogram.

13. Hershler et al disclose generating a cyclogram based on a first and second set of data as well as determining a value of a characteristic of the generated cyclogram. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the angle data obtained by Yamato et al in the form of a cyclogram, as taught by Hershler et al (Figure 4), because joint angle data lends itself naturally to expression in the form of a cyclogram.

14. Furthermore, because Hershler et al only disclose generating a cyclogram using data from one limb, it would also have been obvious to modify Yamato et al in view of Hershler et al such that a cyclogram is created using the data of both limbs, because the incorporation of two types of data, i.e. two limbs, that are naturally expressed individually in the form a cyclogram is well within the scope of the reference. It is also noted that applicant has not pointed out the criticality of generating a cyclogram based on said first and second set of data and why this would not have been obvious.

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15. Similarly, it would have been obvious to determine a value of a characteristic of the generated cyclogram, such as area or orientation, as taught by Hershler et al, because said value is useful for statistical analysis (p.111).

16. In regards to **Claim 24**, Yamato et al disclose the first limb is part of the one body and the second limb is part of the same body (Col.7, line 27-29).

17. In regards to **Claim 26**, Yamato et al disclose the first limb comprising a leg connected to foot (1) used in walking (Col.5, line 49-50).

18. In regards to **Claim 28**, Yamato et al disclose the movement comprises one or more cycles, wherein the walking movement being measured is inherently repeatable and thus cyclic (Col.1, line 10-15).

19. In regards to **Claim 32**, Yamato et al disclose the method rejected above but do not disclose comparing the determined value to a value of the characteristic of a shape representing a baseline movement. Hershler et al disclose comparing the calculated value, such as area, to a corresponding calculated value of a baseline movement (pg.110). Although Hershler et al do not explicitly state comparison to a baseline movement, all comparisons inherently require at least two sets of data, at least one of which is designated as the baseline, depending upon the nature of the comparison. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Yamato et al to include a comparison of the determined value to a value of the characteristic of a shape representing a baseline movement to facilitate better data analysis.

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20. In regards to **Claim 33**, Hershler et al disclose comparing the determined value to a corresponding characteristic representing a baseline movement, as explained in the rejection of **Claim 32**. Hershler et al further disclose comparison to an angle-angle diagram representing a perfectly symmetrical gait, wherein Hershler et al disclose that it is of interest to compare such data with those for pathological conditions (pg.123). Since it is well known in the art that individuals with pathological gait problems do not have a symmetrical gait, comparison of angle-angle characteristics with those having pathological conditions would equate to a comparison of angle-angle characteristics of one with a perfectly symmetrical gait.

21. In regards to **Claim 42**, Yamato et al disclose a system comprising:

a first determination module, referred to as "pressure sensor" (2) (Col.5, line 50-51), configured to determine a first set of data that comprises positions of a first limb as the first limb performs the movement of walking, wherein the limb is a foot (1) (Col.5, line 49-50) of a leg, best seen in Figure 3, wherein data from said first determination is used to determine joint angle data of a first limb (Col.11, line 44-49);

a second determination module, also a "pressure sensor," configured to determine a second set of data that comprises positions of a second limb as the second limb performs a similar movement of walking, wherein the inherently dual-limbed nature of walking necessitates the use of a second pressure sensor (Col.7, line 27-29), best seen in Figure 3, wherein data from said second determination is used to determine joint angle data of a second limb (Col.11, line 44-49);

a generation module, referred to as "superposed image forming portion" (4), configured to generate a shape based on the first set of data and the second set of data (Col.6, line 45-57).

22. However, Yamato et al do not disclose said generation module configured to generate a cyclogram based on the first and second set of data, and do not disclose a third determination module configured to determine a value of a characteristic of the generated cyclogram. Yamato et al do disclose a third determination module, such as "feature location detecting portion" (9) (Col.8, line 48-55), configured to determine a value of a characteristic of the generated shape such as step length (24) and stride length (25), best seen in Figure 3 (Col.10, line 30-44).

23. Hershler et al teach of a generation module to generate a cyclogram based on a first and second set of data (body angle data, analogous to that collected by Yamato et al), as well as a module configured to determine a value, such as area, of a characteristic of the generated cyclogram (p.117-118). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Yamato et al such that said generation module is used to generate a cyclogram based on a first and second set of data (i.e. two limbs) as reasoned above in the rejection of **Claim 23**. Similarly, it would also have been obvious to include a third generation module to determine a value of a characteristic of the generated cyclogram, as Yamato et al already disclose an analogous third generation module used for the similar purpose of determining a value of a characteristic of a generated shape.

24. In regards to **Claim 43**, Yamato et al in view of Hershler et al disclose a method comprising determining a first and second set of joint angle data that comprises positions of a first and second limb respectively, as both limbs perform a movement, generating a cyclogram

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based on the first and second set of data, and determining a value of a characteristic of the generated cyclogram, as elaborated in the rejection of **Claim 23**. However, Yamato et al as modified by Hershler et al do not disclose said method provided on a computer program product including instructions on computer readable medium.

25. Hershler et al disclose generating the body angle data, such as body angle data of Yamato et al (Col.11, line 44-49), in the form of an angle-angle diagram as explained above, as well as determining a value of said angle-angle diagram, such as area. Furthermore, Hershler et al disclose a computer program product, including instructions on computer readable medium, written in Fortran IV language to automate the calculation of a value, such as area, based upon sets of data (pg.117-118). Thus, it is said that Hershler et al teaches automating a method relevant to the method disclosed by Yamato et al as modified by Hershler et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to automate the method of Yamato et al as modified by Hershler et al using a computer program product comprising instructions on computer readable medium, as taught by Hershler et al, to automate the analysis process and make it more efficient.

26. **Claim 25** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Hershler et al, further in view of Nishibe et al (US Pub No. 20040059264).

27. Yamato et al as modified by Hershler et al disclose the method rejected above wherein the first limb is part of one body but does not disclose the second limb part of a different body. Nishibe et al disclose comparison of walking data from a physical sound person with walking data from disabled persons, such as those paralyzed on either the right or left side of the body

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(¶0053, 0063, 0065, 0069, 0074) for more in-depth walking analysis. Thus, it is said that Nishibe et al disclose comparisons between two different subjects. Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Yamato et al as modified by Hershler et al to include comparisons with other people, as taught by Nishibe et al, wherein said comparisons would translate into gathering data for a first limb that is part of one body and a second limb that is part of a different body, to further enhance the walking analysis by including data gathered from different relevant bodies in addition to data gathered from the same body.

28. **Claim 27** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view Hershler et al, further in view of Kolich (US Pat No. 6290658).

29. Yamato et al as modified by Hershler et al disclose the method rejected above but do not disclose the first limb comprising an arm. Kolich teaches that proper arm movement is important for proper form during walking, thus providing motivation to include an arm in analysis of walking (Col.1, line 28-54). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Yamato et al as modified by Hershler et al to include the first limb comprising an arm, to further enhance the walking analysis by including the effects of arm movement.

30. **Claim 31** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamato et al in view of Hershler et al, further in view of Goswami (*A New Gait Parameterization Technique by Means of Cyclogram Moments: Application to Human Slope Walking*).

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31. Yamato et al in combination with Hershler et al disclose calculating a characteristic of the generated shape, wherein the generated shape is a cyclogram, as motivated by the reason provided above (see rejection of **Claim 23**). However, Yamato et al in combination with Hershler et al do not disclose that characteristic as a minimum moment magnitude. Hershler et al also disclose calculating a value from an angle-angle diagram as a means of analysis (pg.111), indicating that there are numerous ways to quantify shape (pg.124).

32. Goswami discloses calculating the moment magnitude of a cyclogram or angle-angle diagram for shape characterization (pg.3). Although Goswami does not explicitly disclose the calculation of the minimum moment magnitude, it is inherent that any calculation allows for ranges between the minimum and maximum. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Yamato et al as modified by Hershler et al, to calculate the minimum moment magnitude as the characteristic of the shape, as taught by Goswami, to allow another effective method for quantifying shape.

Allowable Subject Matter

33. **Claims 34-40** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraph, set forth in this Office action. As of this office action, said claims appear allowable over the prior art of record.

Response to Arguments

34. Regarding applicant's position that Hershler et al do not disclose or teach generating a cyclogram based on first and second data sets corresponding to a first and second limb, Examiner

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notes that it would have been obvious to modify Hershler et al in combination with Yamato et al to generate a cyclogram based on data from a first and second limb, as discussed in the above rejection of **Claim 23**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HQN
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